9-04 JOINT AND CRACK SEALING MATERIALS

9-04.1 Premolded Joint Fillers

9-04.1(1) Asphalt Filler for Contraction and Longitudinal Joints in Concrete Pavements

Premolded joint filler for use in contraction and longitudinal joints shall be ⅛-inch in thickness and shall consist of a suitable asphalt mastic encased in asphalt saturated paper or asphalt saturated felt. It shall be sufficiently rigid for easy installation in summer months and not too brittle for handling in cool weather. It shall meet the following test requirements:

When a strip 2-inches wide and 24-inches long is freely supported 2-inches from each end and maintained at a temperature of 70°F, it shall support a weight of 100 grams placed at the center of the strip without deflecting downward from a horizontal position more than 2-inches within a period of 5 minutes.

9-04.1(2) Premolded Joint Filler for Expansion Joints

Premolded joint filler for use in expansion (through) joints shall conform to the Specifications for "Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction," AASHTO M 213, except the requirement for water absorption which is deleted.

9-04.1(3) Vacant

9-04.1(4) Elastomeric Expansion Joint Seals

Premolded elastomeric expansion joint seals shall conform to the requirements of AASHTO M 220 and shall be formed by an extrusion process with uniform dimensions and smooth exterior surfaces. The cross-section of the seal shall be shaped to allow adequate compressed width of the seal, as approved by the Engineer.

9-04.2 Joint Sealants

9-04.2(1) Hot Poured Joint Sealants

Hot poured joint sealants shall meet the requirements of AASHTO M 173 Concrete Joint Sealer, Hot Poured Elastic Type and be sampled in accordance with ASTM D 5167. In addition, the sealant shall have a C.O.C. Flash Point (AASHTO T 48) of 205°C minimum. In lieu of the specified bond test in M 173, the bond test shall be in accordance with WSDOT Test Method 412.

9-04.2(2) Poured Rubber Joint Sealer

The physical properties of the joint sealer, when mixed in accordance with the manufacturer's recommendations, shall be as follows:

1. Color: Gray or black.
2.[1] Viscosity: Must be pourable and self-leveling at 50ºF.
3.[1] Application Life: Not less than 3 hours at 72ºF and 50 percent relative humidity.
4. Set to Touch: Not more than 24 hours at 72ºF and 50 percent relative humidity.
5. Curing Time: Not more than 96 hours at 72ºF and 50 percent relative humidity.
6. NonVolatile Content: Not less than 92 percent.
7. Hardness Rating (Durometer "Shore A"): 5-35.

8. Resiliency: Not less than 80 percent.
9. Bond test methods shall be in accordance with WSDOT Test Method No. 412.

[1]Viscosity and application life may be waived providing the material is mixed and placed by a pump and mixer approved by the Engineer.

Suitable primer, if required by the manufacturer, shall be furnished with each joint sealer. The primer shall be suitable for brush or spray application at 50ºF or higher and shall cure sufficiently at 50ºF to pour the joint within 24 hours. It shall be considered as an integral part of the sealer system. Any failure of the sealer in the test described herein, attributable to the primer, shall be grounds for rejection or re-testing of the sealer.

Acceptance of joint sealing compound for use on a project shall be on the basis of laboratory tests of samples representative of each batch of material to be used on the job. A period of at least two weeks shall be allowed for completion of tests. Each container of the compound shall be clearly identified as to batch number.

9-04.3 Joint Mortar

Mortar for hand mortared joints shall consist of one part Portland cement, three parts fine sand, and sufficient water to allow proper workability.

Cement shall conform to the requirements of AASHTO M 85, Type I or Type II.

Sand shall conform to the requirements of AASHTO M 45.

Water shall conform to the requirements of Section 9-25.1.

9-04.4 Pipe Joint Gaskets

9-04.4(1) Rubber Gaskets for Concrete Pipes and Precast Manholes

Rubber gaskets for use in joints of concrete culvert or storm sewer pipe and precast manhole sections shall conform to the applicable requirements of AASHTO M 198.

9-04.4(2) Vacant

9-04.4(3) Gaskets for Aluminum or Steel Culvert or Storm Sewer Pipe

Rubber gaskets for use with metal culvert or storm sewer pipe shall be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056, Grade 2B3. Butyl rubber gaskets for use with metal culvert or storm sewer pipe shall conform to the applicable requirements of AASHTO M 198.

9-04.4(4) Rubber Gaskets for Aluminum or Steel Drain Pipe

Gaskets for metal drain pipe shall be self-adhering, butyl-based, scrim-supported type. The gaskets shall be as described in the Standard Plan when specified.

9-04.4(5) Protection and Storage

Rubber gasket material shall be stored in a clean, cool place, protected from sunlight and contaminants. They shall be protected from direct sunlight at all times except during actual installation. Pipes with gaskets affixed shall be installed in the line within 28 days.

9-04.5 Flexible Plastic Gaskets

The gasket material shall be produced from blends of refined hydrocarbon resins and plasticizing materials reinforced with inert mineral filler and shall contain no solvents. It shall not depend on oxidizing, evaporating, or chemical action for adhesive or cohesive strength. It shall be supplied in extruded rope form of such cross section and size as to adequately fill spaces between the precast sections.

The gasket material shall be protected by a suitable removable two-piece wrapper so designed as to permit removing one half, longitudinally, without disturbing the other. Its composition and properties shall conform to those set forth below.

	Test Method	Minimum	Maximum
Bitumen (Petroleum plastic content)	ASTM D 4	50	70
Ash-inert Mineral Matter	AASHTO T 11	30	50
Penetration	ASTM D 217		
32ºF (300gm) 60 sec		75	---
77ºF (150gm) 5 sec		50	120
115ºF (150gm) 5 sec		---	150
Softening Point	AASHTO T 53	320ºF	---
Specific Gravity at 77ºF	AASHTO T 229	1.20	1.35
Weight per gallon, lb.		10.0	11.3
Ductility at 77ºF (cm)	ASTM D 113	5.0	---
Flash Point COC, F	AASHTO T 73	600	---
Fire Point COC, F	AASHTO T 48	625	---
Volatile Matter	AASHTO T 47	---	2.0

9-04.6 Expanded Polystyrene

Expanded polystyrene shall be of a cellular molded type with a density of 1.5 plus or minus 0.25 pounds per cubic foot.

9-04.7 Expanded Rubber

Closed cell expanded rubber joint filler shall conform to ASTM D 1056, Grade No. 2B3.

9-04.8 Flexible Elastomeric Seals

Flexible elastomeric seals for PVC drain pipe and underdrain pipe shall conform to the requirements of ASTM D 3212.

9-04.9 Solvent Cements

Solvent cements for PVC underdrain pipe shall conform to the requirements of ASTM D 2564.

9-04.10 Crack Sealing — Rubberized Asphalt

Crack sealing material shall meet the requirements of Section 9-04.2(1), except no bond test is required.

9-04.11 Butyl Rubber

Butyl rubber shall conform to ASTM D 2000, M1 BG 610. If the Engineer determines that the butyl rubber is utilized in an area that will not be exposed to petroleum products, it shall conform to ASTM D 2000, M1 BA 610.